

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows: In the Specification, page 1, first sentence, please insert:

-- This is a division of Application 09/741,069, filed December 21, 2000, now U.S. Pat. No. 6,656,618, which is a continuation of PCT/JP99/02909., filed May 31, 1999. --

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance:

The Applicant claims a fuel cell system having fuel cells, which receive a supply of a gas and generate electric power to satisfy a load, and a secondary battery, which accumulates electric power therein and outputs the accumulated electric power to satisfy the load, said fuel cells system supplying at least one of the electric power generated by the fuel cells and the electric power output from the secondary battery to a load, said fuel cells system comprising: a gas flow rate-relating quantity measurement

unit configured to measure a gas flow rate-relating quantity, which relates to a flow rate of the gas supplied to said fuel cells; and a control unit configured to specify a working point associated with an output electric current-output voltage characteristic of said fuel cells corresponding to the measured gas flow rate-relating quantity, to determine a first amount of electric power to be taken out of said fuel cells, at the specified working point, to determine a second amount of electric power to be supplied to the load, and to compare said first and second determined amounts of electric power, and to regulate at least one of the electric power to be output from the secondary battery and the electric power to be accumulated in said secondary battery, based on the comparison of the first and second determined amounts of electric power.

Applicant claims a fuel cell system, as described above, comprising means for measuring a gas flow rate-relating quantity, means for specifying a working point, means for determining a first amount of electric power, means for determining a second amount of electric power, means for comparing the first and second determined amounts of electric power, means for regulating at least one of the electric power to be output from the battery and electric power to be accumulated in the battery.

In the prior art of record, Lorenz et al, U.S. Pat. 5,646,852, is directed to a fuel cell working alone to provide power to a vehicle. Lorenz et al therefore addresses a problem unique to such systems: preventing a load that differs from the maximum current output of the fuel cell. Lorenz et al determines the required load from the accelerator pedal position and controls the oxidant flow to the fuel cell so that the fuel cell output does not exceed the vehicle load. Lorenz et al does not provide a battery

which accumulates and/or outputs electric power to satisfy the load, only a starter battery. Lorenz et al also fails to specify a working point associated with an output current/voltage characteristic of a fuel cell corresponding to a measured gas flow rate relating quantity, to determine a first amount of electric power to be taken out of the fuel cells which is required to activate the fuel cells at the specified working point, but instead reduces the determined load requirement to equal a maximum output of the fuel cell.

Azuma et al, JP 07-240212, discloses that the control of the output of the fuel cell is not dependent on the load requirement but is instead dependent on the state of charge of the battery. The teaching of Azuma et al is to maximize system efficiency by operating the fuel cell to provide an output related to the battery state of charge. It does not teach specifying a working point associated with an output electric current-output voltage characteristic of the fuel cell corresponding to a measured gas flow rate-relating quantity, which quantity relates to a flow rate of the gas supplied to the fuel cell, and so Azuma et al could not suggest modifying Lorenz et al to provide this feature.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is (571)272-1288. The examiner can normally be reached on Monday-Friday from 10:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

Application Number**Application/Control No.**

10/659,285

Examiner

ANGELA J. MARTIN

**Applicant(s)/Patent under
Reexamination**

IWASE, MASAYOSHI

Art Unit

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